

A walking
tour
of some of
the
innovative
ways
Portlanders
handle
stormwater



ENVIRONMENTAL SERVICES
CITY OF PORTLAND
working for clean rivers

Dean Marriott, Director
Sam Adams, Commissioner

Portland
State
University

Stormwater Walking Tour



Sustainable Stormwater Management

When it rains, water runs over pavement and other hard surfaces, picking up pollutants. Sustainable stormwater management mimics natural conditions by allowing rain to be filtered by vegetation and soak into the ground. This reduces the need for infrastructure to convey and clean stormwater before it enters waterways.

Pollutants In Stormwater

Particles - From vehicle exhaust and other sources, unburned hydrocarbons, soot, dirt, leaves, etc.

Vehicle Wear and Tear - Copper from brake pads, zinc, cadmium, rubber from tires, lead weights and metal bits.

Vehicle Spills, Leaks and Illegal Dumping - Liquids with dissolved metal pollutants, motor oil, antifreeze and other petroleum products, solvents and dry materials that can release pollutants like phosphorus and nitrogen.

Animal Waste - Fecal bacteria

Garden Products - Chemicals from fertilizers, herbicides and insecticides.

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There are a variety
of creative and
effective ways to
manage stormwater
onsite to help
restore beneficial
natural processes,
enhance property,
and save money



native plants



ecorooft on
cob structure



Native American Center roof garden



stormwater planters

Stormwater that isn't properly managed flows over streets and other hard surfaces washing pollutants into rivers and streams. Directing runoff to natural systems allows stormwater to soak into the ground to reduce volume, while plants and soil filter pollutants and improve water quality.

Green Streets manage stormwater close to its source. They use soil and vegetation to slow stormwater, filter pollutants, and let water soak into the ground.

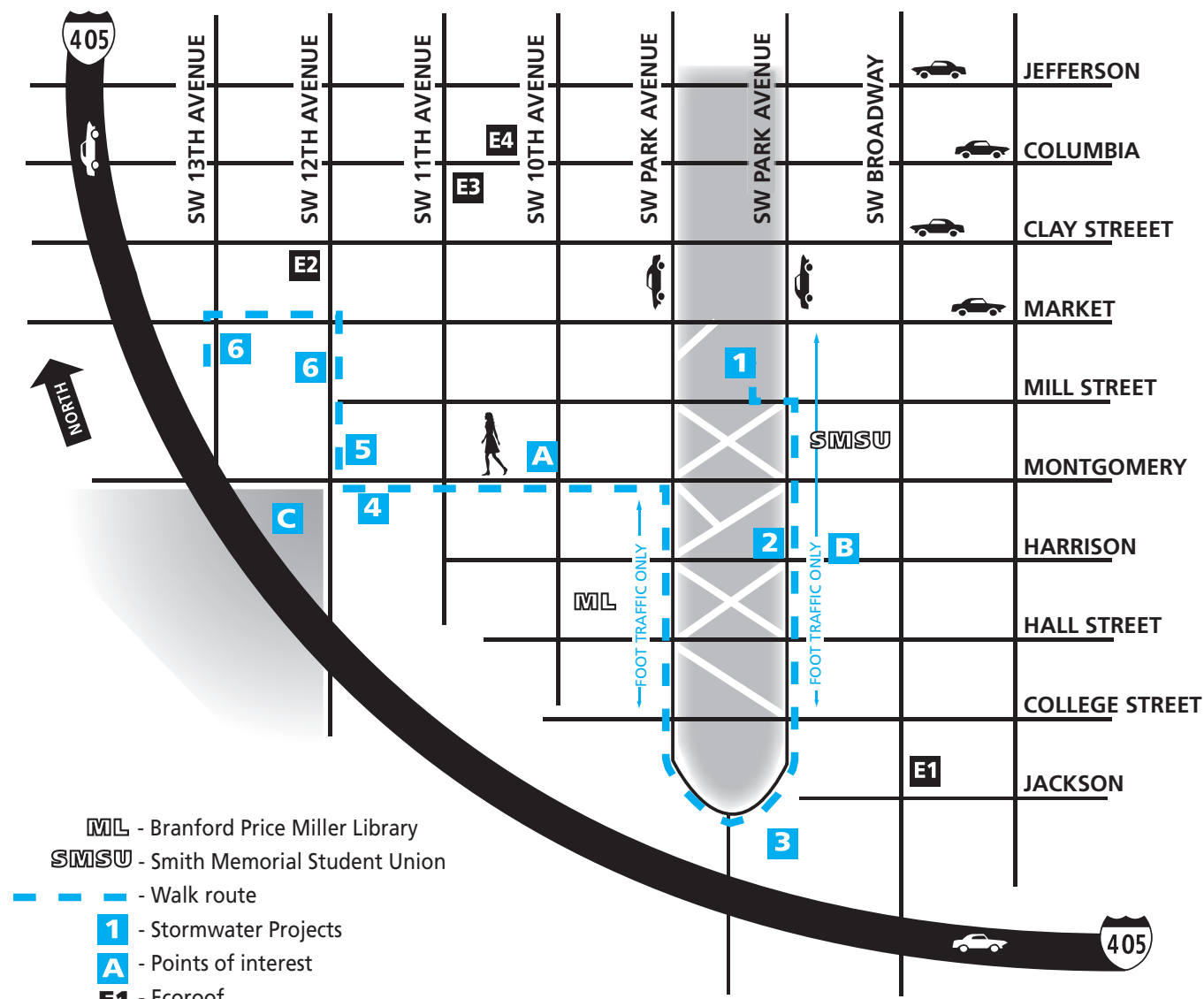
Stormwater planters are landscaped chambers that collect and filter stormwater runoff. Infiltration planters have an open bottom that allows water to soak into the ground. Flow-through planters have an impervious bottom.

Ecoroofts are lightweight, low-maintenance vegetated roofs that soak up rain and reduce stormwater runoff. Ecoroofts naturally insulate buildings to reduce energy use and also reduce the heat island effect that warms the air over cities.

Trees help reduce stormwater runoff volume and flow rate. Mature trees intercept at least 30% of the rainwater that falls on the canopy. Trees also filter stormwater, provide wildlife habitat, and cool the air and stormwater.



green street



Points of Interest

A Naturescaped planting strip

10th and Montgomery

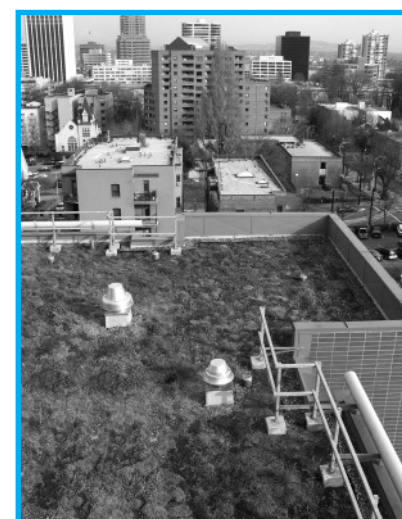
Naturescaping is landscaping with native plants, which require less water and little or no fertilizers or pesticides.

B Kiosk w/ Ecoroof - moves around campus

PSU students built this kiosk to provide a place for students to exchange information and to demonstrate the benefits of an ecoroof.

C Community Garden - 13th and SW Mill

PSU tore down an old apartment building on this site to make way for a garden that is an outdoor growing, learning, and community space for PSU students. The project removed impervious area and replaced it with soil and plants that absorb rainwater.



Hamilton West Apartments ecoroof

Nearby Ecoroofs - No public access

- E1** Broadway Building, 621 SW Jackson Street
- E2** Hamilton West Apartments, 1212 SW Clay Street
- E3** Mosaic Condominiums, 1400 SW 11th Avenue
- E4** Museum Place Lofts and Townhouses, 1030 SW Jefferson Street

Walking Tour

1 Mature Canopy Trees - PSU Park Blocks

Portland's Park Blocks are the City's oldest parks. Landowner and tanner Daniel H. Lowndale donated the land for public use in 1852. The City began landscaping in 1877 by planting 104 Lombardy poplars and European and American elms. There are now over 300 trees in the South Park Blocks. In 2004, PSU students estimated that South Park Block trees contribute \$3.4 million dollars in aesthetic and environmental value to the city. Other researchers have found that a mature tree, such as one of the large elms in the Park Blocks, can absorb up to 550 gallons of stormwater a year. The Park Blocks show how visionary thoughts can make significant impacts in the future.

2 Ecoroofs over Cob structures

Students built these from refurbished local materials and cob, a mixture of sand, clay, and straw similar to adobe. The project features an herb garden, permaculture garden, cob oven, dome shelter, and two ecoroofs. Food for Thought Café will use the oven and garden. Students use the dome structure to study natural building materials and structural design.

3 Roof Garden - Native American Center - 71 SW Jackson Street

The Native American Student and Community Center is a place for Native Americans throughout the region to gather, celebrate cultural traditions and discuss issues facing their communities. Tribal medicinal and ceremonial native plants in a "Sky Catcher" rooftop garden add beauty and insulation to the building while capturing and treating stormwater runoff. The roof garden is open to the public and is ADA accessible.

4 Creative Downspout Disconnect and Stormwater Planter

Stephen E. Epler Hall - SW 12th and Montgomery

The plaza outside Stephen Epler Hall demonstrates an artful and interesting stormwater management system. Roof runoff from the building flows to river-rock splash boxes, then into granite block lined channels, or runnels conveying stormwater to a system of vegetated stormwater planters. The runnels also collect runoff from surrounding pavement and planters from the King Albert Hall roof. The planters filter stormwater before it collects in an underground storage vault. After additional sand and UV filtering, the water is pumped into the sanitary system for toilet flushing on the first floor of Stephen Epler Hall. Some of the water irrigates the landscape around the building. The system saves over 100,000 gallons of potable water each year.

5 Green Street

SW 12th Avenue between Montgomery and Mill Street

When it rains, street runoff that isn't properly managed carries dirt, oil, chemicals and other pollutants into rivers and streams. Four infiltration planters on SW 12th show a more natural stormwater management approach. Stormwater flows into the planters where vegetation and soil filter pollutants before it soaks into the ground.

6 Stormwater Flow-through Planters

Helen Gordon Child Development Center - SW 12th and Mill and SW 13th and Market

Stormwater from the Center's outdoor playground drains to a flow-through planter on Mill Street next to the parking garage. The planter at the Center entrance on 13th manages roof drainage from the building. These planters are examples of effective stormwater management in dense urban areas.



trees and native plants



runnels to planter



flow-through planters